GUIDELINES

for

McCLELLAN GROUNDWATER RECHARGE FACILITY

LANDSCAPE MAINTENANCE

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Santa Clara Valley Water District

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Guidelines

for

McClellan Groundwater Recharge Facility

Landscape Maintenance

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Santa Clara Valley Water District

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PREFACE

This report is intended as a guideline for the numerous people who may be concerned with the landscape maintenance program. This may include administrative personnel, supervisional, as well as groundsmen. The booklet attempts to introduce the concepts behind the design of the project and set some guidelines for management. It is expected that the personnel actually performing the work will be trained in plant material care and will have sufficient responsibility to make decisions regarding the health of any individual plant. Obviously a precise watering, weeding and fertilizing schedule is impossible beyond some general guidelines. The site conditions may alter the growth habits of many of the plants and irregular weather conditions will confuse any irrigation schedule.

In the final analysis it is the man on the end of the hose who must decide how much water the plant needs. Beyond understanding the purposes and guidelines contained in this report, the groundsman must rely on his ability to evaluate the condition of the plant based on its appearance.

MCCLELLAN GROUNDWATER RECHARGE FACILITY

Maintenance Program

The purpose of the recharge facility is the percolation of water in order to recharge the underground aquifer. This helps prevent subsidence and maintains the water table for extraction activities. The location of the pond within a residential community makes it desirable to enhance the pond for aesthetic improvement and to manage the environment for a higher quality of life.

The site is open to the public and will be used as a natural park although the design and facilities are not intended to encourage typical park usage. The mounds are strictly for aesthetic consideration but are designed to allow visual surveillance from the street. The fence around the pond is intended to provide a safety barrier to accidental entry into the water, particularly by small children. The design of the fence is intended to offer the maximum security while providing some aesthetic treatment. The plant material chosen is expected to require little or no maintenance or supplemental irrigation once it is established, and the design of the landscape is intended to create a native setting. The plant material installed is either California native or naturalized material, most of which is found in Santa Clara County. In addition to trees and shrubs, planted either from containers or bare root, the entire site was seeded with a mix of perennial and flowering native groundcovers. These plants, when grown, are expected to enhance the appearance of this facility, provide a natural parklike environment, and encourage a variety of wildlife (birds and small animals) to inhabit the site.

The maintenance activities for this project will be expected to carry out the design. That is, the "natural setting" is not intended to be a developed park. The native plant material is expected to be left alone as much as possible in order to let the natural tendencies of the plants control their growth. The care of the plant material should duplicate as closely as possible the natural conditions under which the plants have grown for years.

Watering

The best guideline to follow for a watering schedule is the normal rainfall for an average year. For example, the rainy season in Santa Clara County usually begins in late Fall and continues intermittently into the Spring. The Summer is fairly dry with only an occasional thunder shower. Total rainfall in the year is approximately fourteen inches which falls, of course, during the Fall, Winter, and Spring. Supplemental irrigation, therefore should be used to supply up to fourteen inches at the time of year normally expected. If no rain falls in November, for example, the plants will not begin their growing season. In the wilderness this is a requisite for survival, but in an urban area it is merely a delay in the visual improvement. Supplemental irrigation must fill in when natural rainfall does not supply the expected mount or frequency of precipitation. This can be critical during nitial establishment and during the 2nd and 3rd year of "reseeding" ermination. Almost constant surface moisture is necessary for ermination of the seeds which are lying on the surface of the round. After establishment of the particular species the need or such exacting procedures is not as critical.

As a rule of thumb a good six inches of rain during a single storm or wet period will maintain sufficient soil moisture for a period of about 90 days, or three months. Since most native plants tend to have deep root systems in order to escape the dry summer, a good Spring irrigation program will reduce the need for summer watering.

For lack of a proven formula of supplemental irrigation, September 15 will be considered the beginning of the Fall irrigation period. Depending upon the condition of the plants and the apparent soil moisture (no rain for the past three months will obviously indicate a need for water) the equivalent of one inch of rain should be applied. The equivalent of one inch of rain should be applied every two weeks through the Fall, Winter, and Spring. The last irrigation application should occur on June 1. No irrigation should be applied on a regular basis after June 1. Those plants that begin to weaken during the summer should be spot watered to prevent actual death, but massive watering of the entire site will only encourage noxious weeds and ultimately ruin the native plantings.

Of course, natural rainfall will occur during the irrigation period September 15 to June 1, but the irrigation is only supposed to supplement the rain. Obviously, after a rain, irrigation will not be required for up to two weeks depending on the amount of rainfall. Some months of rainy periods will require no supplemental irrigation because natural rainfall will occur on a frequent and regular schedule. This is unlikely, however. A reasonable expectation is that natural rainfall will accomplish 50 percent the expected precipitation within this time schedule and the remaining 50 percent will be applied artificially. This means that approximately 9 inches of rainfall will be applied through artificial means by placing over the site 1 inch of precipitation on nine different occasions. This, again, is a rule of thumb and must be adjusted as weather conditions or plant growth dictate. It is always possible that more applications will be necessary to fill in the dry periods of natural weather conditions. It is just as possible that weather conditions will bring rain in sufficient quantities and at such frequency that fewer than nine applications will be required. A long period of overcast, for instance, will help maintain the soil moisture by retarding evaporation.

The amount of artificial assistance required will be reduced over a three year period until the plants are expected to survive on natural rainfall alone. In other words, the first year will require 9 inches of artificial irrigation, the second year will require 6 inches, and the third year will require 3 inches.

It is important that about one inch of rain be applied as quickly as possible in any particular area without causing erosion. Spreading the application out over several days will not place enough water on the soil to soak as deep as necessary. The method used for obtaining the water during the contract period was a portable pump which was lowered into the pond as necessary. A small boat proved a very versatile transportation device for the pump and the man.

ing

The "natural setting" of the pond site will be best promoted by a "hands off" policy when it comes to pruning. The only pruning expected to be needed in the near future will be the lifting of lower branches as the trees begin to grow taller. This will eliminate pedestrian collisions with low-growing limbs. Later on, some shaping will be necessary to balance the trees for wind sail. Typical pruning for shaping (rounding) purposes, however, will be discouraged. The point to keep in mind is that the trees should duplicate the natural appearance found in the wild environment. Naturally, dead or diseased branches should be removed.

Tree Stake Repair

Tree stakes are used to stabilize the tree while it is securing its roots into the surrounding soil. The sooner stakes can be eliminated the better. Trees tend to become lazy if a stake prevents them from flexing in the wind and gaining strength of their own. Replacement will be necessary for the first year as wind damage and vandalism remove them. After the first year, missing stakes should be replaced only if the tree is suffering more damage without one. Other existing stakes should be removed as the tree shows signs of gaining stability and standing upright on its own.

Basin Repair

Basins should be kept in good repair during the rain and irrigation cycle for the first three years. This will assure adequate capture of water within the root zone. The height of the berm, however, should be allowed to decrease gradually through erosion, foot traffic, or deliberate reconstruction. During the summer, obviously, basin repair will not be required. All basins should be reconstructed a little wider and a little shallower than the previous year sometime just before the September 15 irrigation schedule.

Weeding/Mowing

Removing or retarding weed growth will be the greatest time consuming effort next to watering. This will probably decrease slightly over the first three years. The greatest single problem will be the blade grass weeds none of which are desirable in the native plant design. These can be controlled either by hand pulling or, more preferably, by selective herbicides specific to the blade grass. The time of year for weed control is in late Winter or very early Spring before the flowers or seed heads appear. Early weed removal will eliminate next year's weed crop by preventing reseeding. Hand pulling can remove most of the broad-leaved weeds which do not present the unsightly appearance or the fire hazard of the blade grass weeds. Again, early removal will reduce the following year's weed crop. Care must be taken to properly identify the native plant material before wanton removal of all ground cover. Many of the desirable native plants prior to blooming look similar to weeds from the casual observer's point of view. The workers must be trained to recognize the undesirable plant material.

A last resort to weed removal is wholesale mowing of the entire sight. This, if found necessary, should be done to eliminate all weed growth in excess of 12" in height. As a neral rule, the majority of the noxious weeds will exceed this height with sufficient Spring moisture while the native flowering material will not. The proper rotary mowing machine can be set to cut at a height of 12" and effectively reduce the overall height of the weed growth. This technique, however, is only a temporary solution at best, since the weeds will continue to grow, flower and seed. In addition, late Spring mowing will do nothing except reduce the height of the dying weed material. The fire fuel and next year's seed will still be on the site.

Fertilizing/Spraying

As the foregoing issues have suggested, the more neglect the better for these native plants. This is also true in fertilization and spraying. Most of the natural pests (insects and diseases) are commonplace among the native plants in their natural setting, and the fertilization needed is only that sufficient to duplicate the desirable soil conditions for the plant.

The best form of fertilization is the continued compost mulch of decomposing leaves and twigs from the plants themselves. This material should not be removed. It assists in moisture retention as well as soil nutrient replenishment. Occasional supplemental fertilization may be necessary as a particular plant suffers from adjustment to new soil conditions after growing under nursery conditions. This should be discontinued as soon as possible.

The pests that may present themselves should be controlled only if they cause a problem to the pedestrians through the site. The insect pests that will appear from time to time will themselves provide a food source for the bird life. This, again, is part the "natural setting". Spraying, then, should not be done to protect the plants but rather to protect the pedestrians. Occasional pests and diseases will not cause permanent or devastating damage to the plants. Branches that die as a result of infestation should merely be pruned off as a safety precaution.

Erosion Repair

Some minor erosion may occur from rains or broken watering basins. The eroded area should be repaired with soil and a top cover of mulch to prevent increased problems of erosion.

Trash Pick Up

Normal pick up schedules should be maintained around the pond to prevent unsightly and hazardous accumulations of debris. A typical schedule would be Monday morning and Thursday afternoon. It may be desirable to place trash barrels at strategic locations to encourage users to deposit their waste in localized areas. Trash and debris in the water will tend to collect at the downwind end of the pond and be fairly easily removed.

Plant Replacement

As plants die through neglect or vandalism, they should be replaced as quickly as possible. Rapid replacement will eventually discourage vandals. A plant that seems to be doing poorly may be improperly located. If and when a sickly plant dies, its replacement should be located in a different spot or should be a different species entirely.

Fence Repair

As stated earlier, the purpose of the fence is to prevent accidental drownings. Naturally, repair of fence damage should occur as promptly as possible. If parts or replacement material is not immediately available, a temporary barrier should be installed to enforce the intent of the fence.

Manpower Chart

The following chart is an estimate of the anticipated amount of time in man days per week expected to be required by each of the foregoing activities. Naturally, some will be greater at certain times of the year while others are less. Over the first entire year, however, these averages are expected.

MCCLELLAN GROUNDWATER RECHARGE FACILITY

LANDSCAPE MAINTENANCE NEEDS

Activity	Man Day Per Week
Watering	1.0
Pruning	.10
Tree stake repair	.10
Basin repair	.25
Weeding/mowing	1.0
Fertilizing/spraying	.10
Erosion repair	.25
Trash pick-up	.50
Plant replacement	.10
Fence repair	.10
	3.50 Man days per week